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THE KERATOSA IN A COLLECTION OF MEDITERRANEAN SPONGES MAINLY FROM THE ITALIAN COASTS

INTRODUCTION

The material here dealt-with belongs to a collection obtained in the course of many years — on various occasions and not methodically — to which we were able to add some material collected in the course of surveys made by the University of Nice (specimens indicated with the letters NIS): we wish to warmly thank Dr. G. Fredj and Dr. C. Falconetti for this valuable contribution.

Each specimen has a register number (Reg. N. ...) in order to facilitate present and future reference. Colors indicated as C.C. ... refer to the plates of Séguy's « Code Universel des Couleurs ».

Thirty-four species, belonging to fourteen genera, are represented in the collection. Four species are described as new: *Dysidea perfistulata*, *Psammopemma nicaeense*, *Cacospongia proficens* and *Ircinia retidermata*. The genus *Psammopemma* is new for the Mediterranean Sea.

The entire collection has been deposited in the « Museo Civico di Storia Naturale » of Genoa.

The geographic coordinates of the localities mentioned are as follows:

Argentario, Capo Uomo: 42°25' N, 11°05' E.

Between Cap Ferrat and Cap d'Ail: 43°42'-43°43' N, 7°22'-7°23' E.

Capo Vaticano: 38°38' N, 15°49' E.

* Via Balbi 5, 16126 Genova, Italia.

Castellabate: 40°18' N, 14°56' E.
Castro Marina: 40°00' N, 18°25' E.
Cres, Neresine: 44°39' N, 14°24' E.
Crete, Agio Nicolaos: 35°11' N, 25°43' E.
Crete, Gournia: 35°07' N, 25°46' E.
Dubrownik: 42°38' N, 18°06' E.
Elba, Baia di Procchio: 42°48' N, 10°15' E.
Gallipoli: 40°15' N, 18°01' E.
Gargano, Baia di Campi: 41°49' N, 16°12' E.
Giannutri: 42°15' N, 11°06' E.
Gulf of Genoa: position uncertain.
La Spezia, Torre Scuola: 44°03' N, 9°52' E.
Lerici: 44°04' N, 9°55' E.
Leuca West: 39°47' N, 18°21' E.
Leuca East: 39°48' N, 18°23' E.
Limski Canal: 45°08' N, 13°40' E.
Off Calvi: 42°32'-42°41' N, 8°36'-8°53' E.
Panarea: 38°38' N, 15°04' E.
Ponza: 40°53' N, 12°57' E.
Porto Cesareo: 40°15' N, 17°54' E.
Porto Ercole, Grotta Azzurra: 42°22' N, 11°12' E.
Porto Ercole, Isolotto: 42°23' N, 11°13' E.
Portofino, Altare: 44°18' N, 9°12' E.
Portofino, Faro: 44°18' N, 9°13' E.
Portofino, Olivetta: 44°19' N, 9°13' E.
Portofino, Punta Cajeca: 44°18' N, 9°13' E.
Portofino, Punta Chiappa: 44°19' N, 9°09' E.
Portofino, Punta del Pedale: 44°19' N, 9°13' E.
Portofino, San Fruttuoso: 44°19' N, 9°10' E.
Portofino, Vessinaro: 44°18' N, 9°11' E.
Porto Tricase: 39°56' N, 18°24' E.
Punta Manara: 44°15' N, 9°24' E.
Punta Mesco: 44°08' N, 9°38' E.
Torre Incine: 40°59' N, 17°16' E.
Tremiti, Cala dello Spido: 42°07' N, 15°30' E.
Tremiti, Cala Sorrentino: 42°08' N, 15°30' E.
Tremiti, Grotta delle Viole: 42°06' N, 15°29' E.
Tremiti, I Pagliai: 42°07' N, 15°29' E.

DICTYOCERATIDA

DYSIDEIDAE

Dysidea fragilis (Montagu)

Spongia fragilis Montagu, 1818, p. 114

Occurrence

— La Spezia, Torre Scuola; depth 3 m; rock and sediment; diver; August 5, 1966: Reg. N. SP.11.
— Elba, Baia di Procchio; depth 15 m; Posidonia; diver; June 30, 1976: Reg. N. CPR.23.
— Gargano, Baia di Campi; depth 4 m; rock and sediment; diver; October 4, 1967: Reg. N. GAR.45, GAR.46. September 20, 1971: Reg. N. GAR.71, GAR.72.
— Punta Mesco; rock; diver; May 25, 1975: Reg. N. PF.425.
— Portofino, Faro; depth 25 m; rock; diver; July 23, 1977: Reg. N. PF.446.
— Between Cap Ferrat and Cap d'Ail; depth 55 m; detrital; dredge; September 14, 1971: Reg. N. NIS.48.3.

Remarks

Specimens GAR.71 and GAR.72 were found on *Arca noae* L., GAR.46 on *Spondylus gaederopus* L. In specimen SP.11 the inclusions in the fibers consist for the most part of spicule fragments.

Dysidea tupha (Martens)

Fig. 1

Spongia tupha Martens, 1824, p. 534

Occurrence

— Punta Manara; depth 30 m; rock; dredge; January 10, 1972: Reg. N. PF.324.
— Portofino, Punta del Pedale; depth 35 m; mud (specimen fixed on hard substrate); diver; July 16, 1975; Reg. N. PF.410.
— Portofino, Faro; depth 35 m; overhang; diver; July 23, 1977: Reg. N. PF.448.

1. *Dysidea tupha* (Martens). Specimen PF.410.

Dysidea incrustans (Schmidt)

Spongelia incrustans Schmidt, 1862, p. 29

Occurrence

— Porto Tricase; depth 15 m; conglomerates; diver; September 22, 1970: Reg. N. TRI.279.

— Elba, Baia di Procchio; depth 14 m; Posidonia; diver; June 30, 1976: Reg. N. CPR.13.

— Capo Vaticano, Scoglio Vadera; depth 15 m; rock; diver; August 6, 1974: Reg. N. PAN.58.

— Portofino, Olivetta; depth 25 m; rock; diver; July 2, 1976: Reg. N. PF.440.

— Portofino, Faro; depth 25 m; rock; diver; July 23, 1977: Reg. N. PF.443.

— Lerici; depth 2 m; superficial cave; diver; August 6, 1966: Reg. N. LE.5.

Remarks

TRI.279 on *Ircinia variabilis* (Schmidt); CPR.13 on rhizome of Posidonia; PF.443 on oxyrhynch crab.

As observed in some other Mediterranean samples (Pulitzer-Finali & Pronzato, 1977, p. 88), also in these specimens the secondary fibers are free or almost free of foreign material. In specimen LE.5 the inclusions are for the most part spicule fragments.

Dysidea avara (Schmidt)

Spongelia avara Schmidt, 1862, p. 29

Occurrence

— Portofino, Faro; depth 25 m; rock; diver; July 23, 1977: Reg. N. PF.445.
— Portofino, Faro; depth 15 m; rock; diver; August 22, 1973: Reg. N. PF.395.
— Portofino, San Fruttuoso; depth 10 m; overhang; diver; October 14, 1963: Reg. N. PF.141.
— Punta Mesco; diver; May 25, 1975: Reg. N. PF.414.
— Tremiti, Cala Sorrentino; depth 2-3 m; superficial cave; diver; July 1966: Reg. N. PTR.E.11.
— Tremiti, Cala dello Spido; depth 10 m; underwater cave; diver; July 1966: Reg. N. PTR.F.3.
— Porto Cesareo; depth 25 m; sand, Posidonia, boulders; dredge; November 15, 1962: Reg. N. PC.1.
— La Spezia, Torre Scuola; depth 15 m; rock and mud; diver; August 7, 1966: Reg. N. SP.18.
— Argentario, Capo Uomo; depth 30 m; rock; diver; August 25, 1977: Reg. N. 659.

Remarks

SP.18 represents specimens very frequent at this station, horizontally extending on rocks (covering up to 1 sq. m), with cylindrical oscular processes about 5 cm high.

PTR.F.3: the inclusions in the fibers consist almost only of spicule fragments.

PF.395, PF.414, PF.445, PTR.E.11: the inclusions of foreign material are scarce also in the primary fibers.

Dysidea perfistulata sp. n.

Fig. 2

Occurrence

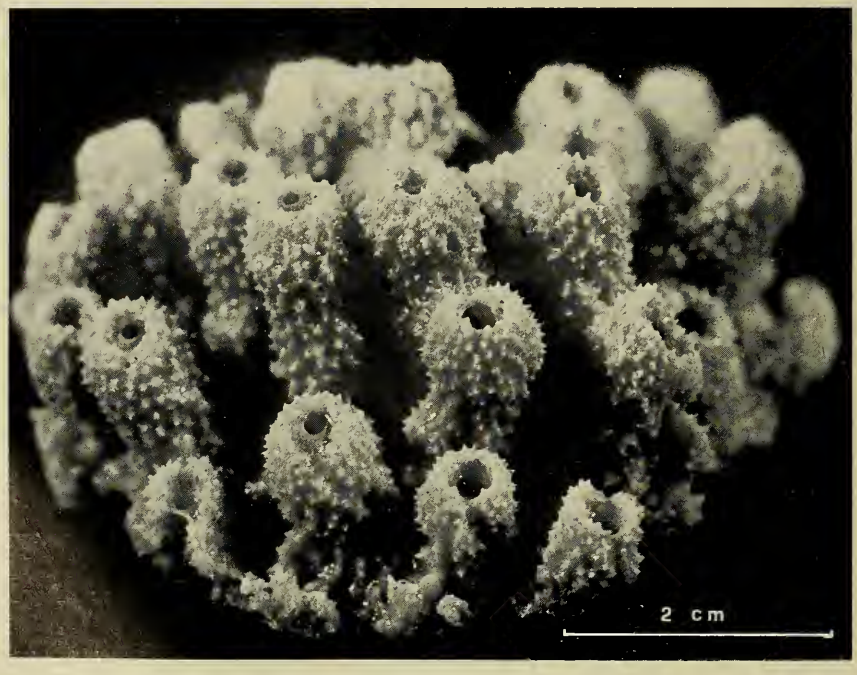
— Gargano, Baia di Campi; depth 4 m; rock and mud; diver; September 15, 1971: Reg. N. GAR.51.

— Gargano, Baia di Campi; depth 4 m; rock and mud; diver; October 4, 1967: Reg. N. GAR.44.

Description

The two specimens differ only in size. The following description refers to GAR.51, the largest one, here designated as holotype.

From a common base, 7.5 x 5.5 cm wide, about thirty digitiform, tubular processes arise that are up to 2.5 cm high, 1 cm in diameter, and bear an apical oscule about 3 mm wide. These processes are not



2. *Dysidea perfistulata* sp. n. Specimen GAR.51, the holotype.

uniformly cylindrical, but, for the most part, a little swollen at their distal end.

The consistency is softly resilient. The color of GAR.44 was light violet, that of GAR.51 was grayish blue. The dermal membrane contains particles of sand. The conules are sharp, about 0.5 mm high and 1 mm apart.

The main fibers consist of sand grains, with spongin apparent only here and there, and are 100-150 μm thick. The connecting fibers, also mostly consisting of sand grains, 20-40 μm thick, the thinner tracts devoid of inclusions, form a close reticulation with meshes 80-450 μm wide.

Remarks

There are two sponges in the literature that may be compared with the present material. In 1862 (p. 30) SCHMIDT described a *Spongelia pallescens* as having a characteristic and readily recognizable habit, 1 to 2 inches-high branches that at their extremities were « fere claviformes vel quasi capitati ». This description would appear to apply to our specimens, but SCHMIDT did not mention the presence of apical oscules, a feature he would hardly have disregarded; moreover, in 1864 (p. 28), he synonymized *Spongelia pallescens* with his *Spongelia incrustans*.

In 1878 (p. 154) SCHULZE proposed a *Spongelia pallescens fragilis tubulosa* as characterized by « Gruppen von fingerfoermigen, roehringen Aesten mit terminalem Osculum ». Although this description might apply to our specimens, the illustration given by SCHULZE (Pl. 5, Fig. 3) does not.

Spongionella pulchella (Sowerby)

Spongia pulchella Sowerby, 1806, p. 87

Occurrence

— Off Calvi; depth 135 m; detrital; dredge; July 17, 1975: Reg. N. NIS.25b.

Remarks

The specimen is very small, cushion-shaped, about 4 x 2 mm, white in spirit.

Spongionella gracilis (Vosmaer)

Fig. 3

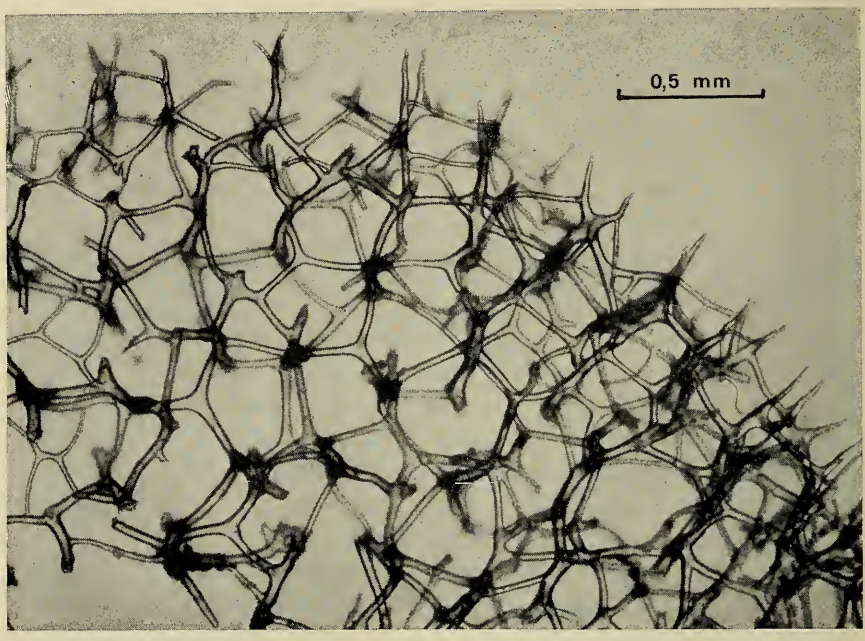
Velinea gracilis Vosmaer, 1883, p. 439

Occurrence

— Castellabate; depth 12 m; diver; July 27, 1971: Reg. N. CAB.12.

Remarks

The specimen consists of about twelve cylindrical hollow processes arising from a common base about 4.5 x 3 cm wide. These processes are up to 2 cm high, with a diameter of 5-8 mm; they are partly coalescent, partly free, slightly clavate. The oscules, apical, have a diameter of 2 to 3 mm.



3. *Spongionella gracilis* (Vosmaer). Skeletal reticulation of specimen CAB.12.

This specimen confirms the extremely characterized habit of this species, as observed at Naples (PULITZER-FINALI & PRONZATO, 1977, p. 89).

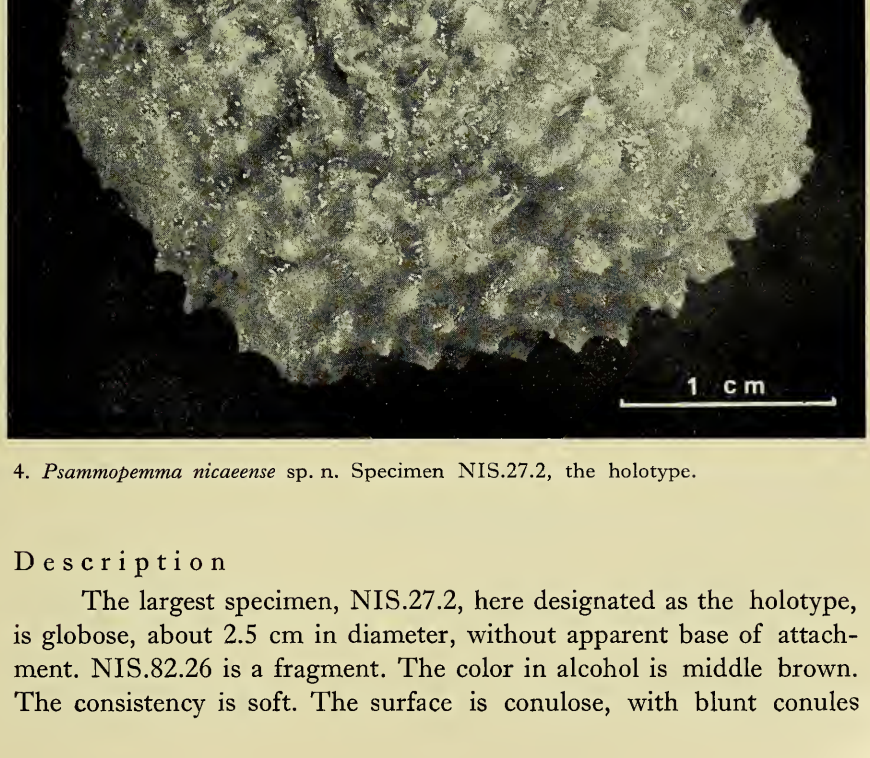
Psammopemma nicaeense sp. n.

Fig. 4, 5

Occurrence

— Off Calvi; depth 137 m; detrital; trawl; July 17, 1975: Reg. N. NIS.27.2.

— Off Calvi; depth 117 m; detrital; dredge: July 15, 1969: Reg. N. NIS.82.26.

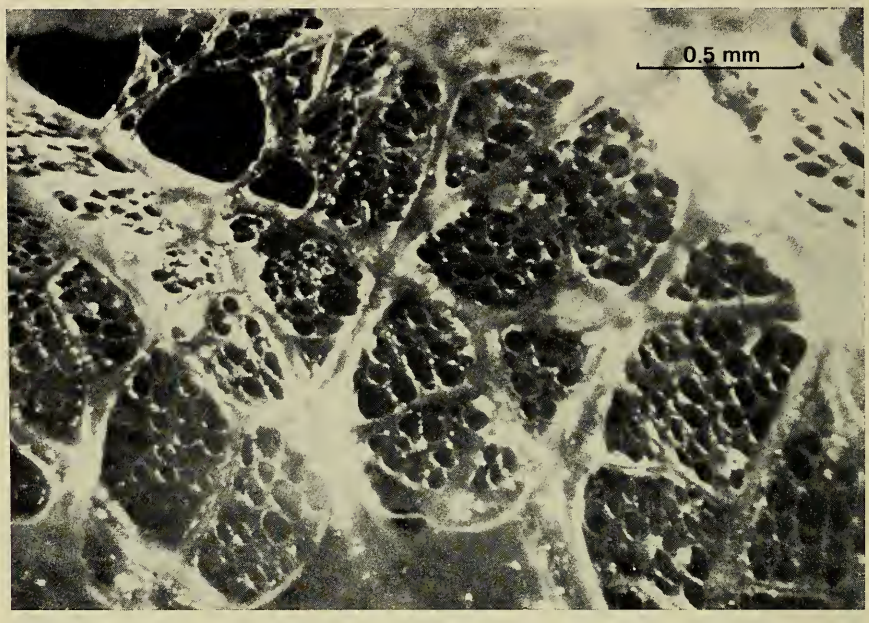


4. *Psammopemma nicaeense* sp. n. Specimen NIS.27.2, the holotype.

Description

The largest specimen, NIS.27.2, here designated as the holotype, is globose, about 2.5 cm in diameter, without apparent base of attachment. NIS.82.26 is a fragment. The color in alcohol is middle brown. The consistency is soft. The surface is conulose, with blunt conules

about 0.5 mm high and 1 mm apart. There is a dermal pellucid membrane, cribrose, reinforced by a reticulation devoid of debris, forming meshes 200-1000 μm wide. The skeleton consists of densely aggregated foreign debris of various nature, among which spicule fragments pre-



5. *Psammopemma nicaeense* sp. n. Dermal membrane of specimen NIS.27.2, the holotype.

vail, bound by very scarce spongin, forming irregular tracts. No definite fibers are recognizable.

The species has been named in honor of the University of Nice, that made this material available.

Psammopemma sp.

Occurrence

— Off Calvi; depth 130 m; detrital; trawl; July 29, 1974: Reg. N. NIS.13.

— Off Calvi; depth 130 m; detrital; dredge; July 28, 1974: Reg. N. NIS.26.

— Off Calvi; depth 132-135 m; detrital; dredge; July 16, 1969: Reg. N. NIS.77.1.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; dredge; September 15, 1971: Reg. N.NIS.65.18.

Remarks

NIS.26 and NIS.13 are globose, measuring respectively 20 and 30 mm; the other specimens are fragments. The color, in the preserved state (alcohol), is buff. The consistency is firm but fragile. The surface is not conulose but uneven, with a pellucid membrane in which scarce, very minute sand grains are included. The skeleton consists of sand grains and debris of various nature, bound by very scarce spongin, not organized in definite fibers.

The four specimens do not appear specifically different; however, they are not sufficiently characterized to justify an identification with a known species or the erection of a new one.

SPONGIIDAE

Spongia officinalis Linné

Spongia officinalis Linné, 1759, p. 1348

Occurrence

— Porto Ercole, Isolotto; depth 6-10 mm; underwater cave; diver; September, 1962: Reg. N. 519.
— Portofino, Punta Chiappa; depth 20 m; overhang; diver; August, 1975: Reg. N. PF.406.
— Portofino, Olivetta; depth 15 m; rock; diver; July 2, 1976: Reg. N. PF.439.
— Panarea; depth 3 m; rock; diver; August 15, 1971: Reg. N. PAN.12.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; detrital; dredge; September 15, 1971: Reg. N. NIS.65.9.
— Between Cap Ferrat and Cap d'Ail; depth 55 m; detrital; dredge; September 14, 1971: Reg. N. NIS.44.
— Leuca West; depth 0.5 m; superficial cave; September 22, 1970: Reg. N. SAL.33.

Spongia virgultosa (Schmidt)

Euspongia virgultosa Schmidt, 1868, p. 4

Occurrence

— Punta Mesco; depth 20 m; rock; diver; July 20, 1975: Reg. N. PF.415.
— Porto Ercole, Isolotto; depth 1 m; superficial cave; September 9, 1963: Reg. N. 559, 560.
— Porto Ercole, Grotta Azzurra; depth 1 m; rock; August 30, 1963: Reg. N. 606.
— Castellabate; depth 20 m; diver; August 8, 1971: Reg. N. CAB.32.
— Castellabate; depth 1 m; overhang, diver; August 31, 1971: Reg. N. CAB.84.
— Panarea; depth 2 m; rock; diver; August 15, 1971: Reg. N. PAN.13a.
— Elba, Baia di Procchio; depth 9-10 m; Posidonia; diver; June 18, 1976: CPR.14a.
— Tremiti, Grotta delle Viole; superficial cave; diver; July 23, 1968: Reg. N. PTR.H.36.
— Tremiti, I Pagliai; depth 0.5 m; superficial cave; July 5, 1966: Reg. N. PTR.C.15.
— Porto Tricase; depth 15 m; conglomerates; dredge; September 22, 1970: Reg. N. TRI.281.
— Portofino, Altare; depth 45 m; rock and sand; fishing nets; March 30, 1965: Reg. N. PF.14.
— Portofino, Punta Cajeca; depth 24 m; overhang; diver; February 5, 1973: Reg. N. PF.346.
— Off Calvi; depth 135 m; detrital; dredge; July 18, 1975: Reg. N. NIS.19.2.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; detrital; dredge; September 15, 1971: Reg. N. NIS.51.1, NIS.65.5.

Spongia agaricina Pallas

Spongia agaricina Pallas, 1766, p. 397

Occurrence

— Portofino, Altare; depth 30-50 m; rock and sand; fishing nets; November 3, 1963: Reg. N. PF.130.

— Porto Ercole, Grotta Azzurra; depth 12 m; rock; diver; September 5, 1963: Reg. N. 590.

Spongia sp.

Occurrence

— Panarea; depth 1-2 m; rock; August 15, 1971: Reg. N. PAN.25, PAN.32, PAN.56.

Description

The sponge is extensively spreading on shadowed rock, from which it can be easily detached. Its thickness may reach 14 mm, but it is for the largest part much less. The consistency is softly elastic. The conules are about 0.5 mm high and 1 mm apart. The skeleton is not distinguishable from that of *Spongia virgultosa* (Schmidt), but here the characteristic oscular processes of the latter are entirely absent.

Hippospongia communis (Lamarck)

Spongia communis Lamarck, 1813, p. 370

Occurrence

— Porto Ercole, Isolotto; depth 0.5 m; rocky shore; August 31, 1963: Reg. N. 573.
— Porto Ercole, Grotta Azzurra; depth 6-12 m; superficial cave; diver; September 5, 1963: Reg. N. 599.
— Portofino, Faro; depth 15-20 m; rock; diver; October 15, 1962: Reg. N. PF.364.

Fasciospongia cavernosa (Schmidt)

Cacospongia cavernosa Schmidt, 1862, p. 28

Occurrence

— Elba, Baia di Procchio; depth 10-15 m; Posidonia; diver; June 17, 1976: Reg. N. CPR.9, CPR.15, CPR.16.
— Porto Tricase; depth 15 m; conglomerates; dredge; September 24, 1970: Reg. N. TRI.276.
— Giannutri; depth 3-6 m; superficial cave; diver; October 1, 1963: Reg. N. 548.

— Tremiti, Cala Sorrentino; depth 9-12 m; underwater cave; diver; July, 1966: Reg. N. PTR.F.12.
— Gallipoli; depth 1-10 m; rock; diver; September 17, 1966: Reg. N. SAL.204.

Remarks

Specimens PTR.F.12 and SAL.204 are growing around and within a mass of calcareous algae and serpulids; their consistency is soft; their fibers are scarce, thin and fragile. Their structure appears nearer to that of the burrowing form of this species, as we have observed in a specimen from the Bay of Naples (PULITZER-FINALI & PRONZATO, 1977, p. 91).

Cacospongia mollior Schmidt

Cacospongia mollior Schmidt, 1862, p. 27

Occurrence

— Dubrownik; depth 30 m; dredge; July 16, 1967: Reg. N. DUB.8
— Panarea; depth 1-4 m; rock; diver; August 15, 1971: Reg. N. PAN.34.
— Portofino, Altare: depth 45 m; rock and sand; fishing nets; March 30, 1965: Reg. N. PF.13.
— Portofino, Faro; depth 35 m; rock; diver; October 15, 1975: Reg. N. PF.387.
— Portofino, Punta Chiappa; depth 20 m; sand; diver; August 21, 1975: Reg. N. PF.407.
— Castellabate; diver; July 24, 1971: Reg. N. CAB.55.
— Porto Ercole, Grotta Azzurra; depth 6-12 m; superficial cave; diver; September, 1962: Reg. N. 528.
— Porto Ercole, Grotta Azzurra; depth 6-12 m; superficial cave; diver; September 5, 1963: Reg. N. 600.

Cacospongia scalaris Schmidt

Cacospongia scalaris Schmidt, 1862, p. 27

Occurrence

— Portofino, Faro; depth 15 m; rock; diver; September 23, 1963: Reg. N. PF.120.

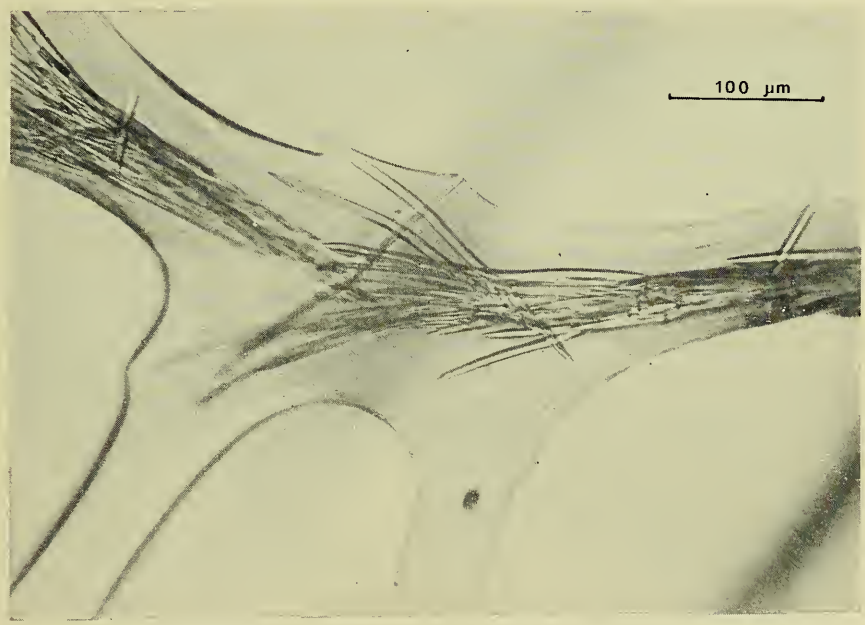
— Portofino, San Fruttuoso; depth 10 m; overhang; diver; October 14, 1963: Reg. N. PF.149.
— Punta Mesco; diver; May 1, 1975: Reg. N. PF.411.
— Punta Mesco; depth 20 m; rock; diver; August 21, 1974: Reg. N. PF.430.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; detrital; dredge; September 15, 1971: Reg. N. NIS.65.21.

Cacospongia proficens sp. n.

Fig. 6, 7

Occurrence

— Tremiti, I Pagliai; depth 2 m; superficial cave; diver; July 5, 1966: Reg. N. PTR.C.2, PTR.C.5.
— Tremiti, Cala Sorrentino; depth 2-3 m; superficial cave; diver; July, 1966: Reg. N. PTR.E.13, PTR.E.21.
— Tremiti, Grotta delle Viole; depth 2-5 m; superficial cave; diver; July 23, 1968: Reg. N. PTR.H.15.



6. *Cacospongia proficens* sp. n. Fibers of specimen PTR.H.15 including oxeas of the associated *Reniera mucosa* Griessinger.

— Torre Incine; depth 6-15 m; underwater cave; diver; July 8, 1968: Reg. N. TI.6.

Description

The sponge has a massive base from which conical processes arise that bear a small apical oscule. Specimen PTR.H.15, designated as the holotype, measures 6 x 7 cm at the base, has about ten processes up to 2 cm high, 12-13 mm wide at their base. The sponge is soft, easy to tear; its color in formalin is gray, cream internally. There is no sand in the dermal membrane. The conules are sharp, about 0.5 mm high and 1 mm apart.

Specimen PTR.E.21 is associated with a *Reniera cratera* Schmidt; all the other ones with *Reniera mucosa* Griessinger. The *Reniera* species cover the specimens for the most part, leaving generally free the oscular processes.

The primary fibers are stratified, branching, not fasciculated; measuring 50-100 μm in diameter, they become thinner, 15-20 μm, towards the conule. They contain abundant foreign material consisting

7. *Cacospongia proficens* sp. n. Fibers of specimen PTR.E.21 including strongyles of the associated *Reniera cratera* Schmidt.

mainly of the spicules of the associated species of *Reniera*. These spicules are for the most part entire. The secondary fibers are stratified, free from inclusions, 25-80 μm thick, forming an irregular reticulation with meshes 2 00-1100 μm wide. This reticulation resembles that of *Cacospongia mollior* Schmidt.

As far as these six specimens are concerned, *Cacospongia proficens* appears characterized by: 1) its conical oscular processes; 2) its association with a *Reniera*; 3) its aptitude to incorporate in its skeleton the extruded spicules of the associated species of *Reniera*; 4) its habitat of shallow-water caves.

It is possible that, when further material becomes available, not all these points will prove to be of specific value. For instance, an association between *Ircinia variabilis* Schmidt and *Reniera cratera* Schmidt is a very common, but not requisite occurrence (in this case, no spicules of the *Reniera* are found in the *Ircinia*).

Ircinia variabilis (Schmidt)

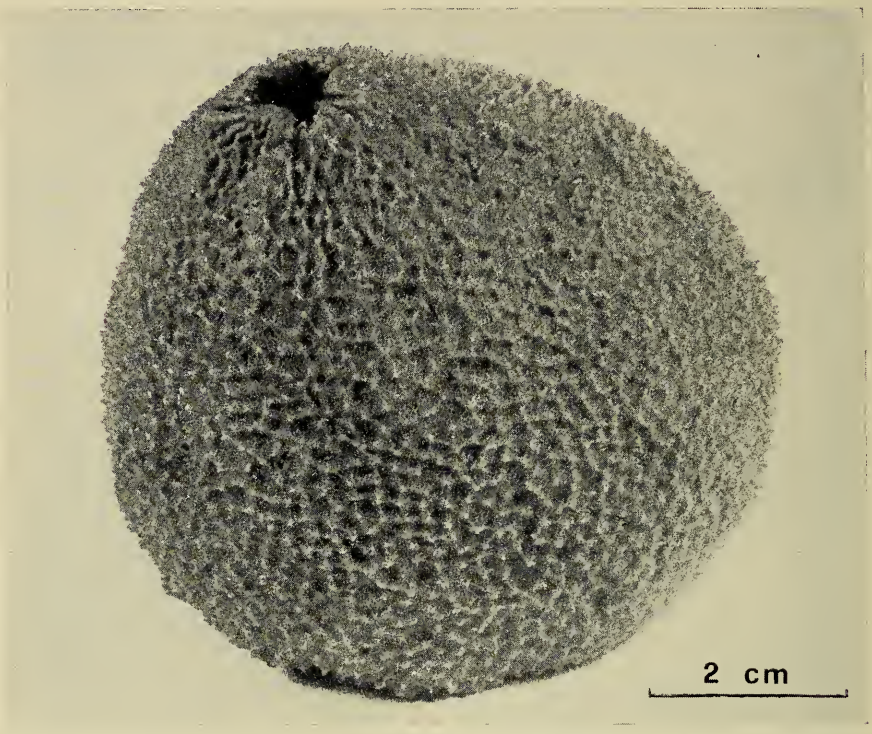
Fig. 8

Hircinia typica Nardo, 1847
Hircinia variabilis Schmidt, 1862, p. 34
Ircinia fasciculata: Laubenfels, 1948, p. 66 (not *Spongia fasciculata* Pallas)
Ircinia typica: Pulitzer-Finali & Pronzato, 1977, p. 93

Occurrence

— Punta Mesco; depth 10 m; rock; diver; August 20, 1974: Reg. N. PF.429.
— Portofino, Faro; depth 35 m; rock; diver; October 15, 1975: Reg. N. PF.393.
— Portofino, Faro; depth 35 m; rock; diver; September 6, 1974: Reg. N. PF.390, PF.391.
— Portofino, Punta Chiappa; depth 20 m; overhang; diver; August 21, 1975: Reg. N. PF.405.
— Portofino, Olivetta; depth 1 m; rock; August 30, 1962: Reg. N. PF.353.
— Portofino, Vessinaro; depth 15-20 m; rock; diver; April 9, 1975: Reg. N. PF.392, PF.400.
— Limski Canal; depth 1-4 m; rock and mud; diver; September 29, 1971: Reg. N. LI.9, LI.14, LI.17.

— Castro Marina; depth 2-6 m; superficial cave; diver; July 29, 1971: Reg. N. ZZ.9, ZZ.23.
— Dubrownik; depth 30 m; detrital; dredge; July 16, 1967: Reg. N. DUB.6.
— Ponza; depth 2-3 m; superficial cave; diver; July 5, 1969: Reg. N. PZ.13.



8. *Ircinia variabilis* (Schmidt). An unusual form represented by specimen PF.391.

— Crete, Gournia; depth 2-3 m; superficial cave; diver; September 20, 1969: Reg. N. CRT.15, CRT.19.
— Porto Ercole, Grotta Azzurra; depth 1-6 m; rock; diver; August 30, 1963: Reg. N. 609, 529, 535, 540.
— Porto Ercole, Grotta Azzurra; depth 6-12 m; superficial cave; diver; September 5, 1963: Reg. N. 579, 605.
— Porto Ercole, Isolotto; depth 0.5 m; rocky shore; September 1, 1963: Reg. N. 572, 586.

— Porto Ercole, Isolotto; depth 6-10 m; underwater cave; diver; September, 1962: Reg. N. 518, 520.
— Giannutri; depth 3-6 m; superficial cave; diver; October 10, 1963: Reg. N. 547.
— Giannutri; depth 3-6 m; superficial cave; diver; September, 1962: Reg. N. 521, 545.
— Castellabate; depth 10-12 m; rock; diver; July 27, 1971: Reg. N. CAB.1, CAB.2, CAB.4, CAB.19, CAB.63.
— Tremiti, I Pagliai; depth 0-4 m; superficial cave; diver; July 5, 1966: Reg. N. PTR.C.10.
— Tremiti, Grotta delle Viole; depth 8 m; superficial cave; diver; July 23, 1968: Reg. N. PTR.H.40, PTR.H.42, PTR.H.43.
— Panarea; depth 1-2 m; rocky shore; August 15, 1971: Reg. N. PAN.7, PAN.29.
— Capo Vaticano; depth 6 m; rock; diver; August 6, 1974: Reg. N. PAN. 57.
— Torre Incine; depth 6-15 m; underwater cave; diver; July 8, 1968: Reg. N. TI.4.
— Gallipoli; depth 4-10 m; rock; diver; September 17, 1966: Reg. N. SAL.201.

Remarks

This material, as was the case with a collection from Naples (Pulitzer-Finali & Pronzato, 1977, p. 11), shows the impracticability, at the present stage of knowledge, of distinguishing the various subspecies, varieties and forms that have been described in connection with this species. The present extensive collection confirms that countless transitions of form, color, size and spacing of the conules occur that cannot be correlated with differences, however slight, in skeletal structure.

A group of specimens, however, PF.390, PF.391, PF.392 and ZZ.23, deserve a particular mention, as they represent a form that does not seem to have been described yet. They are quite regularly globose, with a very narrow base of attachment, and measure from 2 to 8 cm in diameter. They have a single, prominent, apical oscule which in the largest specimen (preserved) is 1 cm wide (Fig. 8).

In the above mentioned paper we have used for this species, following Topsent's advice (1945, p. 5), the name *typica*. However, the synonym *variabilis* is to be maintained according to the International Code of Zoological Nomenclature, Art. 23 (a-b) as amended in 1972.

Ircinia dendroides (Schmidt)

Fig. 9

Hircinia dendroides Schmidt, 1862, p. 32

Occurrence

— Punta Mesco; diver; May 1, 1975: Reg. N. PF.412.
— Portofino, Olivetta; depth 30 m; rock; diver; August 30, 1962: Reg. N. PF.359.

9. *Ircinia dendroides* (Schmidt). Specimen PF.412.

— Castro Marina; depth 0-10 m; superficial cave; diver; July 29, 1971: Reg. N. ZZ.20.
— Crete, Agio Nicolaos; depth 0-1 m; superficial cave; September 22, 1969: Reg. N. CRT.25.

— Porto Ercole, Grotta Azzurra; depth 6-12 m; superficial cave; diver; September 5, 1963: Reg. N. 574.
— Castellabate; depth 1 m; rock; diver; August 31, 1971: Reg. N. CAB.82.
— Elba, Baia di Procchio; depth 9-10 m; Posidonia; diver; June 18, 1976: Reg. N. CPR.10, CPR.11, CPR.12, CPR.14b.
— Gallipoli; depth 1-10 m; rock; diver; September 17, 1966: Reg. N. SAL.202.
— Tremiti, Grotta delle Viole; depth 6 m; superficial cave; diver; July 23, 1968: Reg. N. PTR.H.5.
— Tremiti, Cala dello Spido; depth 1-4 m; superficial cave; diver; July 27, 1968: Reg. N. PTR.I.5.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; detrital; dredge; September 15, 1971: Reg. N. NIS.65.17.

Ircinia foetida (Schmidt)

Filifera (*Sarcotragus*) *foetidus* Schmidt, 1862, p. 36

Occurrence
— Crete, Gournia; depth 2-4 m; rock; diver; September 20, 1969: Reg. N. CRT.3, CRT.5, CRT.13.
— Portofino, Faro; depth 50 m; mud; diver; July, 1975: Reg. N. PF.441.

Ircinia spinosula (Schmidt)

Filifera (*Sarcotragus*) *spinosulus* Schmidt, 1862, p. 35

Occurrence
— Punta Mesco; diver; May 18, 1975: Reg. N. PF.416.
— Porto Ercole, Isolotto; depth 1 m; superficial cave; September 9, 1963: Reg. N. 562.
— Castellabate; depth 26 m; diver; July 22, 1971: Reg. N. CAB.64.
— Castellabate; depth 10-11 m; diver; July 27, 1971: Reg. N. CAB.9, CAB.49.
— Castellabate; depth 20 m; diver; August 8, 1971: Reg. N. CAB.33.
— Tremiti, Grotta delle Viole; depth 8 m; superficial cave; diver; July 23, 1968: Reg. N. PTR.H.4.
— Porto Tricase; depth 15 m; conglomerates; dredge; September 22, 1970: Reg. N. TRI.277.

— Panarea; depth 1-4 m; rock; diver; August 15, 1971: Reg. N. PAN.55.
— Elba, Baia di Procchio; depth 9-10 m; Posidonia; diver; June 8, 1976: Reg. N. CPR.18 CPR.21.
— Argentario Capo Uomo; depth 6 m; rock; diver; August 25, 1977: Reg. N. 661.

Remarks

Inclusions of spicules in the main fibers as recorded by RUETZLER (1965 p. 51) and by BOURY-ESNAULT (1971, p. 342) have been observed in all the specimens with the exception of CAB.9, CAB.49 and PAN.55.

Ircinia pipetta (Schmidt)

Fig. 10

Hircinia pipetta Schmidt, 1868, p. 5

Occurrence

— Castellabate; depth 11 m; diver; July 29, 1971: Reg. N. CAB.46.
— Argentario, Capo Uomo; depth 35 m; rock; diver; August 25, 1977: Reg. N. 660.

Description

The two specimens were attached by a broad base (9 x 8 cm and 7 x 5 cm respectively). From an irregular massive part, unequal, hollow, conical processes arise that are from 1 to 3 cm high and 1 to 2 cm wide at their base, bearing an apical, circular oscule 1 to 3 mm wide. These processes are respectively eleven and five. The sponge is firm and elastic, difficult to tear; its color in formalin is from light brown to dark violet-brown; specimen 660 was grayish azure in life. The dermal membrane contains fine particles of sand. The conules are low, about 0.5 mm, rather irregularly distributed, 1 to 3 mm apart.

The main fibers are fasciculated, each one normally made by a central fiber cored by small inclusions (mainly sand), 50 to 150 μm thick, irregularly surrounded by a trellis of fibers free of inclusions, 20 to 40 μm thick. These compound fibers, which may assume here and there the aspect of a perforated plate, have a diameter of 400-700 μm. The transversal secondary fibers are simpler, also moderately cored by foreign matter, generally narrow at their center and attached to the main fibers by diverging, anastomosing, root-like processes. The meshes

formed by this reticulation are 2 to 3 mm wide. The filaments are up to 6.5 μm thick.

Remarks

These specimens do not agree closely with SCHMIDT's figure (1868, Pl. 2, Fig. 2), but they correspond exactly to TOPSENT's redescription (1938, p. 7) of SCHMIDT's material at the Paris Museum.

10. *Ircinia pipetta* (Schmidt). Specimen 660.

TOPSENT (1945, p. 13) regards *Ircinia pipetta* (Schmidt) as belonging to the subgenus *Sarcotragus*, but it may be observed that, while the fasciculated fibers of this species are referable to that subgenus, its filaments are not. In fact, *I. pipetta* affords an argument against maintaining a subgenus *Sarcotragus*.

The identity of *I. pipetta* with the *I. fasciculata* of SCHMIDT (= *Ircinia variabilis* (Schmidt)), assumed by VACELET (1959, p. 91), cannot be confirmed. *I. pipetta* differs from *I. variabilis* not only for its habit, but also for the character of its fibers.

Ircinia retidermata sp. n.

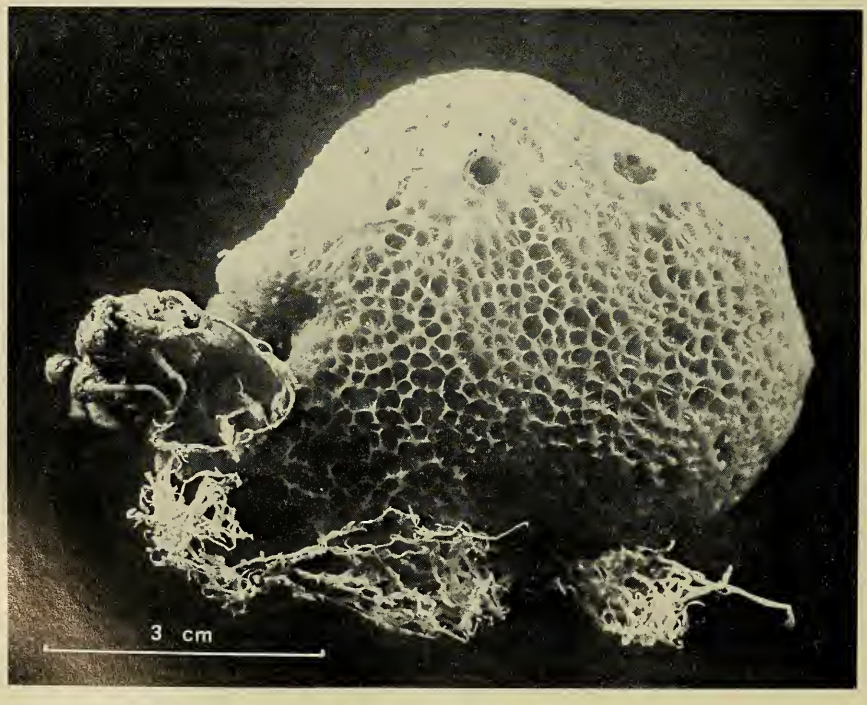
Fig. 11

Occurrence

— Gulf of Genoa; depth 70-80 m; mud; trawl; October, 1962: Reg. N. PF.147, PF.361.

Description

The specimen PF.147 (designated as the holotype) is massive rounded; it incorporates at its rather narrow base the alga *Cystoseira zosteroides* (Turner), probably the originary base of attachment. PF.361



11. *Ircinia retidermata* sp. n. Specimen PF.147, ½ the holotype.

is a fragment with the same alga at its base. PF.147 measures 9 x 6 x 6 cm and has a firm and elastic consistency. The oscules are scattered, with elevated margin, 2 to 5 mm wide. The conules are blunt, about 1-2 mm high and 1-3 mm apart, and are connected with each other by a raised, honeycombed reticulation, quite conspicuous to the unaided eye, made of fine particles of sand and a concentration of filaments, with meshes about 80 μm wide. The color in the preserved state of PF.147 is beige, that of PF.361 is middle brown.

The main fibers are not fasciculated, moderately cored by foreign matter (sand and spicule fragments), 50-80 μm thick. The secondary fibers are irregularly trellis-like, free of inclusions, 20-80 μm thick, forming with the main fibers meshes 200 to 600 μm wide. The filaments have a thickness of about 5 μm.

Remarks

This species appears distinguished by its reticulated surface and by its habitat of a muddy bottom comparatively deep. It is worthy of note that both specimens are attached to the same species of alga.

Ircinia sp.

Occurrence

— Between Cap Ferrat and Cap d'Ail; depth 55 m; detrital; dredge; April 19, 1971: Reg. N. NIS.54.
— Between Cap Ferrat and Cap d'Ail; depth 76 m; detrital; dredge; September 15, 1971: Reg. N. NIS.65.10.

Description

The two specimens measure respectively 4 x 2 x 1 cm and 6 x 6 x 2 cm; probably growing repent, they have a very irregular shape, with short branches and processes. They incorporate a large quantity of coarse debris; their consistency is tough and elastic. The conules are sharp, about 1.5 mm high and 1-2 mm apart. The primary fibers include a moderate amount of fragments of spicules and have a diameter of 150-300 μm. The connecting fibers are free of inclusions and have a diameter of 25-50 μm. The filaments measure up to 1.7 μm in diameter.

Remarks

These specimens agree in some characters with *Ircinia spinosula* (Schmidt), but their aspect is so different that an identification seems

not advisable. There is apparently a closer agreement with the *Ircinia* sp. recorded by us from Naples (PULITZER-FINALI & PRONZATO 1977, p. 96), in spite of the fact that no inclusions were found in the fibers of the latter.

DENDROCERATIDA

APLYSILLIDAE

Aplysilla rosea (Barrois)

Verongia rosea Barrois, 1876, p. 57

Occurrence

— Portofino, Punta del Pedale; depth 35 m; mud; diver; July 16, 1975: Reg. N. PF.386.
— Lerici; depth 2-4 m; superficial cave; diver; August 6, 1966: Reg. N. LE.7.
— Portofino, Faro; depth 6 m; rock; diver; June 16, 1976: Reg. N. PF.438.

Remarks

In specimen LE.7 the ramified fibers are often anastomosed.

Chelonaplysilla noevus (Carter)

Aplysina noevus Carter, 1876, p. 229

Occurrence

— Off Calvi; depth 135 m; detrital; dredge; July 17, 1975: Reg. N. NIS.25.4.

Darwinella gardineri Topsent

Darwinella gardineri Topsent, 1905, p. CLXXIX

Occurrence

— Portofino, Faro; depth 30 m; rock; diver; June 11, 1976: Reg. N. PF.435.

— Portofino, Faro; depth 10 m; rock; diver; September 6, 1974: Reg. N. PF.385.

Remarks

Specimen PF.435, incrusting, spreading, covered a wide extension. Its color in life was C.C. 316.

Darwinella australiensis Carter

Darwinella australiensis Carter, 1885, p. 202

Occurrence

— Portofino, Faro; depth 20 m; rock; diver; June 3, 1976: Reg. N. PF.433.
— Portofino, Faro; depth 12 m; rock; diver; October 15, 1975: Reg. N. PF.383.
— Portofino, Punta del Pedale; depth 6-8 m; rock; diver; November 29, 1974: Reg. N. PF.388.
— Portofino, Punta Cajeca; depth 10-12 m; rock; diver; March 24, 1976: Reg. N. PF.384.
— Lerici; superficial cave; diver; August 6, 1966: Reg. N. LE.2.

Remarks

PF.433: violet (C.C.583).
PF.383: light azure-violet.
PF.388: light azure-violet.

Pleraplysilla spinifera (Schulze)

Spongelia spinifera Schulze, 1878, p. 152

Occurrence

— Off Calvi; depth 135 m; detrita; dredge; July 17, 1975: Reg. N. NIS.25a.
— Portofino, Altare; depth 45 m; rock; fishing nets; March 30, 1965: Reg. N. PF.10.
— Portofino, Punta Chiappa; depth 35-40 m; rock; diver; October, 1962: Reg. N. PF.119, PF.377.
— Portofino, San Fruttuoso; depth 10 m; overhang; diver; September 20, 1963: Reg. N. PF.126, PF.144.

— Portofino, Faro; depth 25 m; rock; diver; September 6, 1974: Reg. N. PF.394.

— Portofino, Faro; depth 45 m; detrital; diver; June 3, 1976: Reg. N. PF.432.

— Punta Mesco; diver; May 25, 1975: Reg. N. PF.413.

— Portofino, Punta Cajeca; depth 24 m; overhang; diver; February 5, 1973: Reg. N. PF.346.

Remarks

The color in life of specimen PF.432 was recorded as C.C.199.

Pleraplysilla minchini Topsent

Pleraplysilla minchini Topsent, 1905, p. CLXXXIV

Occurrence

— Portofino, Punta Chiappa; depth 20 m; overhang; diver; August 21, 1975: Reg. N. PF.409.

— Punta Mesco; diver; May 18, 1975: Reg. N. PF.422.

Remarks

The color in life of specimen PF.409 was recorded as azure-gray.

Hexadella racovitzai Topsent

Hexadella racovitzai Topsent, 1896, p. 119

Occurrence

— Leuca East; superficial cave; diver; September 22, 1966: Reg. N. SAL.217bis.

Remarks

The sponge, represented by fragments, was extensively incrusting on rock, from which it was easily detachable. The thickness is 3-5 mm; the color in life was brown, after preservation in alcohol it is cream. The consistency is fleshy, easy to tear. The oscules are numerous, about 0.5-1 mm wide, with a raised rim about 0.5 mm high. The choanocyte chambers are numerous, ovoidal, 30-50 μm in diameter.

VERONGIDA

VERONGIIDAE

Verongia aerophoba (Schmidt)

Fig. 12

Aplysina aerophoba Schmidt, 1862, p. 25

Occurrence

— Porto Ercole, Grotta Azzurra; depth 2-6 m; rock; diver; September, 1962: Reg. N. 538.
— Gargano, Baia di Campi; depth 2-5 m; rock and mud; diver; October 4, 1967: Reg. N. GAR.3.

12. *Verongia aerophoba* (Schmidt). Specimen GAR.61.

— Gargano, Baia di Campi; depth 2-5 m; rock and mud; diver; September 15, 1971: Reg. N. GAR.61, GAR.73.
— Limski Canal; depth 2-5 m; rock and mud; diver; September 29, 1971: Reg. N. LI.15.

— Cres, Neresine; depth 0-1 m; rock; August 16, 1973: Reg. N. LI.51.
— Crete, Agio Nicolaos; depth 1.5 m; September 22, 1969: Reg. N. CRT.34.

Remarks

The color in life of specimen GAR.61 was noted as yellow (C.C. 256) to brown (C.C.191).

Verongia cavernicola Vacelet

Fig. 13

Verongia cavernicola Vacelet, 1959, p. 88

Occurrence

— Portofino, Punta Chiappa; depth 48 m; rock; diver; October, 1962: Reg. N. PF.135.

13. *Verongia cavernicola* Vacelet. Specimen PF.135.

— Portofino, Faro; depth 45 m; detrital; diver; June 3, 1976: Reg. N. PF.431.

Remarks

PF.135: color in life yellow (C.C.258).

PF.431: color in life yellow (C.C.228).

Among the characters distinguishing *Verongia cavernicola* Vacelet from *Verongia aerophoba* (Schmidt) Vacelet pointed out that in the former the oscular processes terminate with a depression. In our specimens this distinction is not apparent, a fact also observed by Sara' (1960, p. 469).

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ABSTRACT

A collection of Mediterranean Keratose sponges, which includes thirty-four species representing fourteen genera, is systematically recorded and annotated. Four species are described as new: *Dysidea perfistulata*, *Psammopemma nicaeense*, *Cacospongia proficens* and *Ircinia retidermata*. The genus *Psammopemma* is new for the Mediterranean Sea.

RIASSUNTO

Vengono sistematicamente registrate e commentate trentaquattro specie di Keratose, rappresentanti quattordici generi, appartenenti ad una collezione di spugne mediterranee. Quattro specie sono nuove: *Dysidea perfistulata*, *Psammopemma nicaeense*, *Cacospongia proficens* e *Ircinia retidermata*. Il genere *Psammopemma* è nuovo per il Mediterraneo.